

ABSTRACT

A semiconductor device that includes at least one nonconfluent spacer layer on at least one surface thereof. The at least one nonconfluent spacer layer at least partially spaces the surface of the semiconductor device apart from another semiconductor device assembled in stacked arrangement therewith. Adjacent stacked semiconductor devices may include abutting nonconfluent spacer layers which together define a distance between opposed surfaces of the semiconductor devices. Each nonconfluent spacer layer includes voids therein that communicate with an exterior periphery of the layer to facilitate the lateral introduction of adhesive or encapsulant material into the layer and between the adjacent, stacked semiconductor devices. Multi-chip modules are also disclosed, as are methods for forming the nonconfluent spacer layers and assembly and packaging methods.